

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re application of

ATARASHI, TAKAFUMI, et al.

Appln. No.: 09/202,216

Filed: April 8, 1999

For: MULTILAYER-COATED POWDER



Group Art Unit: 1615

Examiner: W. Benston, Jr.

Handwritten: #17
At Harmon
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RESPONSE UNDER 37 C.F.R. § 1.111

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Responsive to the outstanding Office Action dated April 3, 2000, once extended from July 3, 2000 to August 3, 2000 by the filing of an appropriate Petition and payment of an extension of time submitted herewith, please consider Applicants' remarks as follows:

Preliminarily, the examiner is respectfully requested to acknowledge Applicants' claim for priority under 35 U.S.C. § 119 and receipt of the certified copies of the priority documents from the International Bureau in the national stage application.

Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. However, the examiner did not set forth a basis for rejection under 35 U.S.C. § 112. Furthermore, the examiner noted that page 4 and pages 45-52 of the specification are blank, and questioned whether information is missing.

In response, the Examiner may have examined a specification including only the replacement pages in the English translation of the Japanese PCT specification, which were

amended according to PCT Article 34. The corresponding rule for submitting replacement pages RECEIVED
to the U.S. receiving office is found in 37 C.F.R. § 1.485(a)(1). In particular, the substitute 11 200
pages replace corresponding pages of the PCT application. Pages 4 and 45-52 are blank because 1600/2200
this material was deleted in the Article 34 Amendment. The pending claims are claims 1-7 and
9-12. Claim 8 was deleted in the Article 34 Amendment.

For the Examiner's convenience, Applicants submit herewith a substitute specification
incorporating the Article 34 amendments and in which the blank sheets have been removed. The
substitute specification contains no new matter.

Withdrawal of the foregoing rejection under 35 U.S.C. § 112 is respectfully requested.

Claims 1-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S.
Patent 5,165,915 to Tokubo et al. The Examiner considered Tokubo et al as teaching a
multilayered, coated powder comprising a base particle and a coating layer formed from an
inorganic metal compound, an organic compound and/or a metal oxide.

Applicants respectfully traverse for the following reasons.

The present invention is directed to a multilayered-powder comprising a base particle
having a specific gravity of 0.1 to 10.5 and having thereon plural coating layers. Each of the
coating layers has a refractive index which is different from that of the other coating layers. The
present invention provides a powder colored in a stable tone, such as blue, green or yellow,
which is capable of being colored without using a dye or pigment. This is achieved by forming a
thin film comprising plural layers differing in refractive index on the surface of a powder to
regulate the multilayered film with respect to its reflected-light interference waveform (pages 7-8
of the specification).

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Applicants respectfully submit that Tokubo et al does not teach a multilayer-coated powder as suggested by the examiner. Rather, Tokubo et al concerns a composite powder prepared by incorporating one or two or more kinds of organic, inorganic, metallic powder or inorganic sol-like substance in a powder comprising a water-swellable clay mineral (column 3, lines 1-8, 10 and 24). The composite powder is prepared by a spray drying method in which a water-swellable clay mineral is added to a dispersion of one kind or two or more kinds of organic, inorganic, metallic powder or inorganic sol-like substance to prepare a gel, where the organic, inorganic or metallic powder or inorganic sol-like substance is uniformly dispersed in the gel. The dispersion thus obtained is spray dried to obtain a composite powder (column 4, lines 59-64 and column 7, lines 48-61). The composite powder thus prepared contains the organic, inorganic or metallic powder in admixture with the water-swellable clay. Thus, the composite powder of Tokubo et al may contain, for example, a metal oxide in admixture, but that metal oxide does not form a coating layer or rather plural coating layers on a base particle as required by present claim 1.

Moreover, Tokubo et al relating to composite clay powders is in a technical field that is different from that of the present invention such that one of ordinary skill would not look to Tokubo et al to solve the problems treated by the present invention. Specifically, Tokubo et al only disclose a water-swellable clay mineral composite powder containing, in admixture, one or two of an organic, inorganic or metal powder, and neither teaches nor suggest the optical effect of the present invention.

On the other hand, the multilayer-coated powder of the present invention can provide a vivid color due to a light interference effect by controlling the wavelength of the reflection peak

or bottom with a change in the thickness of the plural coating layers constituting the multilayer-coated powder.

Notwithstanding the foregoing, Applicants further submit that the subject matter of present claim 12 is separately patentable from claim 1, and in its own right represents an advance in the state of the art.

According to claim 12, the respective layers have a thickness determined by first fixing a fundamental film thickness according to equation (1), and then correcting the thickness based on empirical factors, such as phase shift occurring at the interface between film layers and the base particle material, and a shift in the absorption peak due to the wavelength dependence on refractive index. As a result, the respective coating layers have an interference reflection peak and interference transmission bottom at the same specific wavelength. There is nothing in Tokubo et al which even remotely teaches or suggests a multilayer-coated powder having an interference reflection peak or interference transmission bottom at a specific wavelength by adjusting the layer thickness as required by present claim 12.

In view of the foregoing remarks, it is respectfully submitted that the present invention is patentable over Tokubo et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 103(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 1-7 and 9-12 is earnestly solicited.

In the event that the examiner believes that it may be helpful to advance the prosecution of this application, the examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,



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